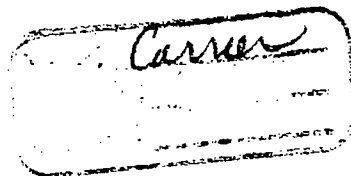




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.  
ATLANTA, GEORGIA 30365



DATE: August 28, 1991

SUBJECT: Partial Review of the June 24, 1991 Carrier NPL Site  
Remedial Investigation Report, Collerville, Tennessee

FROM: Lee Thomas, Hydrologist  
Ground-Water Technology Support Group

LAT

TO: Beth Brown, Remedial Project Manager  
North Superfund Remedial Branch

A partial review has been conducted of the June 24, 1991 Carrier NPL Site Remedial Investigation Report, Collerville, Tennessee as requested in your June 26, 1991 memorandum. The review has been limited to the following questions: has the extent of contamination been fully delineated by the additional ground-water monitoring wells and is there adequate information to indicate where the shallow aquifer above the clay layer has the potential to be a continuing source of contamination due to the presence of DNAPLs.

Shallow Clay Layer

A geophysical survey has been conducted over the northwest portion of the facility to help delineate the extent of the clay layer. Such a survey was considered necessary to ensure that the clay was continuous, and that the extent of the clay layer was accurately represented by the monitoring well data. Although parts of the facility could not be included in the study due to the presence of buildings and other anthropogenic features, the geophysical report concludes that the pinch-out of the clay to the west of the site is consistent with the data provided by the monitoring wells. Although the depiction of the clay layer at the site has not been brought up to date by the addition of new data such as the geological information from new wells MW-57 and MW-58, the picture of the clay layer that emerges is that of an isolated lens that has managed to sufficiently retard the movement of DNAPLs from the site so as to isolate the Memphis sand from direct contact with DNAPLs. Due to the ability of the clay to retard the movement of DNAPLs, a remedial alternative should be selected that will treat the thin aquifer above the clay layer as a source that has to be isolated from the Memphis Sand to prevent further contamination.



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Contrary to what is stated in the report, the clay lens does not appear to be a contiguous the Jackson Clay. The clay appears to be a separate lens from the Jackson Clay as it pinches out to the west where the clay is known to be present. Such an interpretation is consistent with USGS WRIR 90-4092 which apparently uses one of the city water supply wells near the site (Well # 44 in Table 6) as a data point in Plate 4 to show that the Jackson Clay is absent in the area.

#### Extent of Contamination

New ground-water monitoring wells were constructed at the site and other deep wells in the Memphis Sand were designated for sampling to complete the delineation of the plume at the site. The complete data for the new wells has not been submitted to EPA so it is not known if the full extent of contamination has been delineated. Also, several of the new wells were constructed in an area beyond the clay lens pinchout. Unfortunately, these wells were inexplicably not completed to the water table and will not provide any useful information concerning the distribution of contamination. Information on the distribution of contamination in these areas, if any, is still needed and should be gathered, possibly during the remedial design.

#### Extent of DNAPL Source Area

Based on the as yet incomplete ground-water monitoring well data, and the configuration of the clay lens, it appears that the DNAPL source area is confined to the south end of the clay lens. There were concerns that DNAPLs might be located such that they could serve as a source of contamination to the Memphis Sand northwest of the main plant area. Data received thus far indicates that aqueous concentrations of dense chlorinated solvents are lower in ground-water than would be expected if DNAPLs are present in the northwest portion of the facility in the northwest portion of the facility. However, there is still substantial contamination that could result in contamination of the Memphis Sand. Thus DNAPL source control should be considered at the south end of the clay lens but may not be required to the northwest. The extent of contamination and its potential threat to the Memphis Sand should be evaluated in the northwest portion of the facility.

#### Summary and Conclusions

Based on the still incomplete data from the site, it appears that the clay layer has been defined near its western pinch out. The clay also appears to be internally continuous, although not continuous with the Jackson Clay. The DNAPL

source area appears to be restricted to the south end of the clay layer but high levels of contamination exist in the northwest portion of the facility that may endanger the Memphis Sand and as a result potentially threaten water quality in the city wells. The full data set from the new monitoring wells will be required prior to the determination that the extent of contamination has been defined. It is unfortunate that some of the new monitoring wells to the west of the clay lens pinch out were not completed into the water table, since data is needed from this area to determine if the extent of contamination has been determined.

Hopefully these comments will be useful in your review of the portions of the RI concerning the delineation of the clay layer and the extent of contamination and source areas. If there are any questions, please contact me at x3866.